Aviation Investigation Final Report

Location:	Townsend, Montana	**Accident Number:**	WPR15FA135
Date & Time:	March 26, 2015, 12:20 Local	**Registration:**	C-GAUS
Aircraft:	Piper PA32R - 301	**Aircraft Damage:**	Substantial
Defining Event:	VFR encounter with IMC	**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated private pilot received an official weather briefing before beginning the visual flight rules (VFR) cross-county flight over mountainous terrain. The briefing included information about turbulence, icing, and mountain obscuration along the proposed route of flight, and the briefer stated that VFR flight was not recommended in areas of higher terrain with mountain obscuration. However, the pilot elected to depart on the flight. The passenger reported that during the flight, the weather started closing in, and they were soon in the clouds. The pilot was receiving VFR flight following service, and reported to the controller that he was turning around; soon after communication was lost.

Review of radar data revealed that, over the last 4 minutes of the flight, the airplane made multiple turns while ascending to 10,125 ft msl over mountainous terrain with peaks reaching 9,400 ft in height; it then headed southbound and descended to an altitude of 9,300 ft msl before dropping off radar. The accident site was located in heavily wooded and snow-covered terrain at an elevation of 8,350 ft. Damage to the airplane and to the trees at the accident site was consistent with controlled flight into terrain with the engine operating at a high power setting.

Examination of the pilot's logbook indicated that an instrument check ride was accomplished in December 2008, about 6 years 3 months before the accident and that the pilot had not logged any flight experience between December 2008 and October 2014, about 6 months before the accident. According to the logbook, the pilot was not current to act as pilot-in-command under instrument flight rules and likely was not proficient in instrument flight.

A weather model simulation revealed that the airplane likely encountered rapid horizontal wind speed changes along with downdrafts during the last 4 minutes of the flight. These downdrafts, which were likely encountered while the airplane was in clouds, would have increased the pilot's difficulty of maintaining level flight. If the pilot had been instrument current, he would likely have been better prepared to cope with the weather conditions encountered, including the mountain obscuration and the downdrafts.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to depart on and to continue a visual flight rules flight over mountainous terrain into instrument meteorological conditions, which resulted in controlled flight into terrain. Contributing to the accident was the pilot's lack of recent instrument flight experience, which exacerbated his difficulty in maintaining control of the airplane while encountering downdrafts and mountain obscuration conditions.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Low visibility - Decision related to condition
Environmental issues	Low visibility - Effect on operation
Aircraft	Altitude - Not attained/maintained
Personnel issues	Recent instrument experience - Pilot
Personnel issues	Qualification/certification - Pilot
Personnel issues	Situational awareness - Pilot
Environmental issues	Downdraft - Effect on operation

Factual Information

History of Flight

Enroute-change of cruise level	VFR encounter with IMC (Defining event)
Enroute-change of cruise level	Course deviation
Enroute-change of cruise level	Controlled flight into terr/obj (CFIT)

On March 26, 2015, about 1220 mountain daylight time, a Piper PA-32R-301, Canadian registration C-GAUS, collided with mountainous terrain about 16 miles northeast of Townsend, Montana. The private pilot was fatally injured, the passenger was seriously injured, and the airplane sustained substantial damage. The airplane was registered to the pilot, and he was operating it under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a cross-country flight. Visual meteorological conditions prevailed for the flight, and a flight plan was not filed. The flight departed about 1200 from Great Falls International Airport (GTF), Great Falls, Montana, and the intended destination was Scottsdale Airport (SDL), Scottsdale, Arizona.

According to a fueler at the Springbank Airport (CYBW), near Calgary, Canada, the airplane departed from CYBW on the morning of the accident. The fueler said that the pilot told him that he had decided to delay his departure from CYBW due to unfavorable weather conditions. According to the passenger, who was the pilot's wife, they flew from CYBW to GTF, cleared customs, refueled, and shortly thereafter departed GTF for SDL.

According to Federal Aviation Administration (FAA) air traffic control personnel, after departing from GTF, the pilot received visual flight rules (VFR) flight following services from the non-radar approach control facility at the Helena Regional Airport (HLN), Helena, Montana. The controller solicited and received several position reports from the pilot as the airplane progressed southbound on the east side of HLN's Class D airspace. About 1220, the pilot reported that he was reversing his course due to clouds in the area. The pilot stated that the flight was "going back north," and the controller thought that the flight was returning to GTF. Shortly thereafter, the controller lost communications with the pilot. According to the controller, losing communications with aircraft in that area was not uncommon and did not trigger a search and rescue response. The controller stated that he verbally advised GTF tower that the airplane was returning.

Review of radar data revealed a primary target, consistent with the accident airplane, traveling on a southbound heading at an altitude of 8,450 ft mean sea level (msl), before climbing over the next 10 minutes to about 9,500 ft msl. Two minutes later, the target initiated multiple turns while climbing to 10,125 ft msl over mountainous terrain with peaks reaching 9,400 ft in height. The last 2 minutes of the radar track depicted the target heading southbound, paralleling the northern ridgeline of Mount Baldy, while descending to an altitude of 9,300 ft msl before disappearing from radar.

The passenger stated that, during the flight, the weather started closing in and they were soon in the clouds. She recalled that the pilot turned the airplane right to try to exit the clouds, and she heard the pilot communicate on the radio that they were turning around. She heard a computer voice inside the cabin state "terrain," followed by a partial "terr…," and then the airplane impacted the wooded, snow-covered terrain. The passenger used her cell phone to contact local authorities and report that the airplane had crashed and that the pilot was unconscious. The passenger also reported to the local authorities that she had injuries to her ribs.

A local search and rescue airplane found the wreckage after detecting the airplane's emergency locator transmitter. Coordinates were given to a search and rescue team that reached the accident site at 1810. The team reported encountering severe winter weather conditions.

Pilot Information

Certificate:	Private	**Age:**	56,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 19, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 12, 2008
Flight Time:	628 hours (Total, all aircraft), 31 hours (Total, this make and model)		

Passenger Information

Certificate:		**Age:**	Female
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

The pilot, age 56, held a Canadian private pilot's license with airplane single-engine land and instrument ratings. A Canadian third-class airman medical certificate was issued on June 19, 2014, with the limitation that glasses must be worn. The pilot reported on his most recent medical certificate application that he had accumulated 628.8 total flight hours.

An examination of the pilot's logbook indicated that an instrument flight rules (IFR) check ride was accomplished on December 12, 2008, when the pilot had a total of 600 hours of flight time and 24 hours of actual instrument flight time. The logbook also indicated that almost 6 years had passed between the

IFR check ride and the next entry on October 24, 2014. Between October 24, 2014, and the last entry on February 22, 2015, 12 flights equating to almost 32 flight hours were entered. According to the logbook, the pilot had a total of 632 hours of flight time. He had logged 31 flight hours in the accident airplane make and model, which included 3.8 hours in the last 90 days. He had logged a total of 27 hours of actual instrument flight time, none of which were in the last 90 days. Based on a review of the pilot's logbook, the pilot did not meet the recent instrument experience requirements of the Canadian Aviation Regulations (CARs) Part IV Standard 421.48, Period of Validity, to act as pilot-in-command in instrument meteorological conditions.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	C-GAUS
Model/Series:	PA32R - 301 301	**Aircraft Category:**	Airplane
Year of Manufacture:	2001	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3246191
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	September 1, 2014 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	1479 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1479 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, activated, aided in locating accident	**Engine Model/Series:**	IO-540-K1G5
Registered Owner:	David Charron	**Rated Power:**	300 Horsepower
Operator:	David Charron	**Operating Certificate(s) Held:**	None

The six-seat, low-wing, retractable-gear airplane, serial number 3246191, was manufactured in 2001. A review of the airplane's logbooks revealed that the last 100-hour inspection was completed on September 1, 2014, at a total time of 1,479 hours. The last logbook entry, dated February 22, 2015, indicated the airplane had a total time of 1,520 hours. The engine was a Lycoming IO-540-K1G5, serial number L-28049-48A, rated at 300 horsepower. At the most recent 100-hour inspection, the total time on the engine was 1,479 hours. The airplane was equipped with a Hartzell model HC-I3YR-1RF, serial number HK710B, three-bladed, adjustable-pitch propeller.

The airplane was equipped with a panel mounted mini-iPad with terrain avoidance software. This software would have provided an audible voice alert of "terrain" when in close proximity to terrain.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KHLN,3868 ft msl	**Distance from Accident Site:**	32 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	288°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 4800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	18 knots /	**Turbulence Type Forecast/Actual:**	/ Terrain-Induced
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/ Severe
Altimeter Setting:	30.25 inches Hg	**Temperature/Dew Point:**	12°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GREAT FALLS, MT (GTF)	**Type of Flight Plan Filed:**	None
Destination:	Scottsdale, AZ (SDL)	**Type of Clearance:**	VFR
Departure Time:	12:00 Local	**Type of Airspace:**	Class G

At 1153, the automated surface weather observation station at HLN (elevation 3,877 ft, 32 miles northwest of the accident site) reported wind from 280° at 18 knots, visibility 10 statute miles, overcast at 4,800 ft, temperature 12° Celsius, dew point 2° Celsius, and an altimeter setting of 30.25 inches of mercury. The remarks section of the report indicated that, at 1129, the peak wind was from 280° at 29 knots.

The pilot received official weather briefings for the flight from GTF to SDL from Lockheed Martin Flight Service (LMFS) both by phone and electronically. The pilot called LMFS at 1126 while the airplane was on the ground at GTF. During the phone briefing, the pilot and the briefer discussed the overall weather synopsis for the proposed route of flight. The briefing included the presence of clouds along the route of flight in southwestern Montana through the Jackson Hole area and AIRMETs for turbulence, icing, and for mountain obscuration. VFR flight was not recommended in areas of higher terrain with mountain obscuration. The pilot and briefer also discussed problem weather spots including a gusting west wind and ceilings 4,500 to 6,000 ft agl in the Great Falls area and low scattered cloud coverage from Great Falls south to Bozeman, Montana. In addition, the pilot received an official weather briefing text package that was generated via a desktop computer application at 1129. The official weather briefing text package contained winds aloft information, current AIRMETs, Storm Prediction Center convective outlooks, area forecasts, weather observations, and terminal aerodrome forecast information from departure through destination. None of the information received specifically mentioned the possibility of mountain wave activity over the mountainous terrain. The AIRMETs forecast mountain obscuration due to clouds, precipitation, mist, and fog. There is no record of the pilot receiving or retrieving any additional weather information before beginning the flight.

A weather research and forecasting model simulation was run to simulate the weather conditions surrounding the accident site at the accident time. The simulation indicated that horizontal wind speed increased about 15 knots as the flight gained altitude along the flight track between 1216 and 1218. The horizontal wind speed then decreased about 7 to 10 knots between 1218 and 1220. The simulation

indicated that the flight likely encountered downdrafts with a velocity between 500 and 900 ft per minute in the accident site area.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	Unknown
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	46.448333,-111.231109(est)

The accident site was in heavily wooded and snow covered terrain at an elevation of 8,350 ft msl. The majority of the airplane came to rest at the end of a debris field about 300 ft in length. The debris field maintained a level elevation on a 20° east-northeast facing slope on a heading of about 350° magnetic. Both wings had separated from the fuselage with additional wreckage strewn throughout the debris path. The forward fuselage partially separated forward of the wing attachments revealing the forward cabin seats. The fuselage came to rest on its left side.

The first identified point of contact (FIPC) was an evergreen tree about 25 ft in height, which was missing the top 2 ft of its trunk. Over the next 150 ft, numerous trees were topped along the debris field. The right wing tip fairing and a small piece of broken green navigation light lens were found on the right side of the debris field about 40 ft from the FIPC. Next were portions of the right outboard wing that displayed accordion type crushing from the leading edge to the trailing edge. Both the left and right inboard sections of the wings were found next in the debris field. Near the midsection of the debris field was a long portion of disturbed snow about 10 ft wide, 20 ft long, and 3 ft deep. Several large trees were down along the debris path. A fresh diagonal cut, consistent with a propeller blade strike, was found on a smaller topped tree at a height of about 6 ft above the ground. The propeller assembly had separated from the engine and was found near the tree that displayed evidence of a blade strike. The propeller assembly had impact damage to two of the three blades, and the spinner was crushed. Throughout the remaining length of the debris field, several larger trees were topped about 4 ft from their bases. All major structural components of the airplane were located within the wreckage debris path.

Examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. For further information, see the Wreckage Examination Summary in the public docket for this accident.

Medical and Pathological Information

Forensic Medicine and Pathology, PLLC, in Billings, Montana, conducted an autopsy on the pilot. The medical examiner determined that the cause of death was "massive blunt traumatic injuries to head,

chest and left arm, when injured in plane crash into mountain."

The FAA's Civil Aeromedical Institute (CAMI) performed toxicology tests on the pilot. According to CAMI's report, carbon monoxide, cyanide, volatiles, and drugs were not detected. Valsartan, a medication to treat high blood pressure and heart failure, was detected.

Administrative Information

Investigator In Charge (IIC):	Swick, Andrew
Additional Participating Persons:	Robert Radke; FAA-FSDO; Helena, MT Charles R Little; Piper Aircraft, Inc.; Chino Hills, CA Mark W Platt; Lycoming Engines; Phoenix, AZ
Original Publish Date:	April 20, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90935